Division: $(2,6) \div (3,7)$ $\quad \frac{2+6i}{3+7i} \times \frac{3-7i}{3-7i}$ $\quad$ (2) $\quad a^2-b^2=(a+b)(a-b)$

$$\frac{(2+6i)(3-7i)}{(3)^2-(7i)^2} = \frac{(2)(3)+(2)(-7i)+(6i)(3)+(6i)(-7i)}{9-(-49)}$$

$$= \frac{6-14i+18i+42}{9+49} = \frac{36+4i}{58} = \left(\frac{24}{29}, \frac{2}{29}\right) \text{ Ans}$$

Q $(5,-4) \div (-3,-8)$

Multiplicative Inverse: M.I is $(1,0)$

1) Multiplicative inverse of (a,b) is $\left(\frac{a}{a^2+b^2}, \frac{-b}{a^2+b^2}\right)$

2) Additive identity is $(0,0)$, Additive inverse of Every complex number (a,b) is $(-a,-b)$ $\quad \{(a,b)+(-a,-b)\}=(0,0)$

Q Find multiplicative inverse $(-4,7)$

$$\left(\frac{a}{a^2+b^2}, \frac{-b}{a^2+b^2}\right) = \frac{-4}{(-4)^2+(7)^2}, \frac{-7}{(-4)^2+(7)^2} = \frac{-4}{16+49}, \frac{-7}{16+49}$$

$$= \left(\frac{-4}{65}, \frac{-7}{65}\right)$$

Additive inverse:- $(-4,7) = (4,-7)$

Questions: i) $(\sqrt{2}, -\sqrt{5})$ (ii) $(1,0)$ (iii) $-3-5i$ (iv) $(1,2)$

$$a^2+4b^2 = (a)^2+(2b)^2+4ab-4ab = (a+2b)^2-4ab$$

Question: Seperate into real and imaginary parts (write as a simple complex Number.

Solution:- $\frac{2-7i}{4+5i}$ $\quad * \frac{2-7i}{4+5i} \times \frac{4-5i}{4-5i} = \frac{(2)(4)+2(-5i)-(7i)(4)+(-7i)(-5i)}{(4)^2-(5i)^2}$

$$\frac{2-7i}{4+5i} = \frac{8-10i-28i-35}{16+25} = \frac{-27-38i}{41} = \frac{-27}{41} - \frac{38}{41}i$$

Questions: $(-2+3i)^2$ (ii) $\frac{i}{1 \ldots}$